AMENDMENTS TO THE CLAIMS

1-34. (Canceled)

35. (Previously Presented) Apparatus for treating a condition of a subject, comprising:

an electrode device, configured to be coupled to longitudinal nervous tissue of the subject; and

a control unit, configured to drive the electrode device to apply to the nervous tissue a current which is capable of inducing first orthodromic action potentials that propagate in the nervous tissue in a first direction, so as to treat the condition, and configured to suppress second action potentials from propagating in the nervous tissue in a second direction opposite to the first direction,

wherein the control unit is configured to repeatedly, during a series of temporally non-contiguous periods, induce the first orthodromic action potentials and suppress the second action potentials, and

wherein the control unit is configured to substantially withhold, during respective times between the non-contiguous periods, the inducing of the first orthodromic action potentials and the suppressing of the second action potentials.

36. (Previously Presented) Apparatus according to claim 35, wherein the control unit is configured to drive the electrode device to configure the current to induce the first orthodromic action potentials to propagate in the nervous tissue in an afferent direction with respect to a central nervous system of the subject, so as to treat the condition.

37. (Previously Presented) Apparatus according to claim 35, wherein the control unit is configured to drive the electrode device to configure the current to induce the first orthodromic

action potentials to propagate in the nervous tissue in an efferent direction with respect to a central nervous system of the subject, so as to treat the condition.

38. (Previously Presented) Apparatus according to claim 36, wherein the longitudinal tissue includes a vagus nerve of the subject, and wherein the electrode device is configured to be coupled to the vagus nerve of the subject.

39. (Previously Presented) Apparatus according to claim 35, wherein the control unit is configured to: (a) drive the electrode device to apply the current, and (b) suppress the second action potentials, at substantially the same time.

40. (Original) Apparatus according to claim 35, wherein the control unit is adapted to configure the current to be capable of treating an involuntary movement disorder of the subject.

41. (Previously Presented) Apparatus according to claim 35, wherein the control unit is configured to regulate the suppressing of the second action potentials so as to inhibit an undesired response of a central nervous system of the subject generated responsive to the electrode device applying the current to the nervous tissue.

42. (Previously Presented) Apparatus according to claim 35, wherein the control unit is configured to regulate the suppressing of the second action potentials so as to inhibit an undesired sensation generated responsive to the electrode device applying the current to the nervous tissue.

43. (Previously Presented) Apparatus according to claim 35, wherein the control unit is configured to regulate the suppressing of the second action potentials so as to suppress second action potentials induced responsive to the electrode device applying the current.

44. (Withdrawn) Apparatus according to claim 35, wherein the control unit is adapted to configure the current so as to be capable of treating a sleep disorder of the subject.

45. (Withdrawn) Apparatus according to claim 35, wherein the control unit is adapted to configure the current so as to be capable of treating a gastrointestinal motility disorder of the subject.

46. (Withdrawn) Apparatus according to claim 35, wherein the control unit is adapted to configure the current so as to be capable of treating an eating disorder of the subject.

47. (Withdrawn) Apparatus according to claim 35, wherein the control unit is adapted to configure the current so as to be capable of treating obesity of the subject.

48. (Withdrawn) Apparatus according to claim 35, wherein the control unit is adapted to configure the current so as to be capable of treating anorexia of the subject.

49. (Withdrawn) Apparatus according to claim 35, wherein the control unit is adapted to configure the current so as to be capable of treating a gastrointestinal tract disorder of the subject.

50. (Withdrawn) Apparatus according to claim 35, wherein the control unit is adapted to configure the current so as to be capable of treating hypertension of the subject.

51. (Withdrawn) Apparatus according to claim 35, wherein the control unit is adapted to configure the current so as to be capable of treating coma of the subject.

52. (Original) Apparatus according to claim 35, wherein the control unit is adapted to configure the current so as to be capable of treating epilepsy of the subject.

53. (Previously Presented) Apparatus according to claim 35, wherein the longitudinal tissue includes a vagus nerve of the subject, and wherein the electrode device is configured to be coupled to the vagus nerve of the subject, and wherein the control unit is configured to: (a) configure the current so as to be capable of treating epilepsy of the subject, and (b) suppress second action potentials that interfere with an ability of the subject to speak.

54. (Withdrawn) Apparatus according to claim 35, wherein the longitudinal tissue includes a vagus nerve of the subject, and wherein the electrode device is adapted to be coupled to the vagus nerve of the subject, and wherein the control unit is adapted to configure the current so as to be capable of inducing constriction of a lower esophageal sphincter of the subject.

55. (Canceled)

56. (Previously Presented) Apparatus according to claim 35, wherein the electrode device is configured to be coupled to longitudinal nervous tissue of a central nervous system of the subject.

57. (Previously Presented) Apparatus according to claim 35, wherein the electrode device is configured to be coupled to nervous tissue of a peripheral nervous system of the subject.

58. (Previously Presented) Apparatus according to claim 35, wherein the control unit is configured to identify an action potential conduction velocity, and, in suppressing the second action potentials, to suppress second action potentials characterized by the identified conduction velocity.

59. (Previously Presented) Apparatus according to claim 58, wherein the control unit is configured to withhold suppression of second action potentials having a conduction velocity substantially different from the identified conduction velocity.

60. (Previously Presented) Apparatus according to claim 35, wherein the control unit is configured to regulate the suppressing of the second action potentials so as to inhibit an undesired effector action responsive to driving the electrode device to apply the current to the nervous tissue.

61. (Withdrawn) Apparatus according to claim 60, wherein the control unit is configured to suppress second action potentials that induce increased acid secretion in a gastrointestinal tract of the subject.

62. (Withdrawn) Apparatus according to claim 60, wherein the control unit is configured to suppress second action potentials that induce muscular contraction.

63. (Previously Presented) Apparatus according to claim 60, wherein the control unit is configured to suppress second action potentials that induce bradycardia.

64. (Previously Presented) Apparatus according to claim 35, wherein the control unit is configured to drive the electrode device to apply an electric field to the nervous tissue configured to suppress the second action potentials.

65. (Original) Apparatus according to claim 64, wherein the electrode device comprises a plurality of electrode devices, adapted to be coupled to the nervous tissue at respective longitudinal sites thereof.

66. (Original) Apparatus according to claim 65, wherein the control unit is adapted to drive the plurality of electrode devices to apply a respective plurality of electric fields to the nervous tissue, at different respective times.

67. (Original) Apparatus according to claim 65, wherein two of the plurality of electrode devices are adapted to be coupled at

adjacent ones of the sites that are separated by at least about 2 mm.

68. (Original) Apparatus according to claim 65, wherein two of the plurality of electrode devices are adapted to be coupled at adjacent ones of the sites that are separated by less than about 4 mm.

69. (Original) Apparatus according to claim 35, and comprising a sensor adapted to sense an indication of a presence of the condition and to generate a sensor signal responsive thereto, wherein the control unit is adapted to drive the electrode device responsive to the sensor signal.

70. (Original) Apparatus according to claim 35, wherein the control unit is adapted to receive an input from the subject and to drive the electrode device responsive to the input.

71-72. (Canceled)

73. (Previously Presented) Apparatus according to claim 69, wherein the sensor is configured to sense the indication by sensing at least one physiological parameter of the subject selected from the group consisting of: electroencephalographic (EEG) waves, respiration changes, heart rate changes, an aura, and a motor effect.

74. (Withdrawn) Apparatus according to claim 69, wherein the condition includes a gastrointestinal motility disorder of the subject, and wherein the sensor is configured to sense the indication by sensing at least one physiological parameter of the subject selected from the group consisting of: a pattern of contractions of a portion of a gastrointestinal tract of the subject, and digestion by the subject.

75. (Withdrawn) Apparatus according to claim 69, wherein the condition includes a sleep disorder of the subject, and wherein

the sensor is configured to sense the indication by sensing at least one physiological parameter of the subject selected from the group consisting of: a respiration pattern of the subject indicative of wakefulness during normal nocturnal hours, abdominal impedance changes associated with respiration by the subject indicative of the sleep disorder, a sustained abnormal period of cessation of respiration of the subject, respiration typically associated with a state of sleeplessness of the subject, electroencephalographic (EEG) activity of the subject, a sudden uncontrolled nodding of the head of the subject, abdominal impedance of the subject, and eye movement of the subject.

76. (Withdrawn) Apparatus according to claim 69, wherein the indication includes swallowing by the subject, and wherein the sensor comprises one or more electrodes configured to be implanted in a vicinity of an esophagus of the subject, and to detect the swallowing.

77. (Withdrawn) Apparatus according to claim 69, wherein the condition includes an eating disorder of the subject, and wherein the indication includes a quantity of food consumed by the subject in a predetermined period of time, and wherein the sensor is configured to sense the quantity.

78. (Withdrawn) Apparatus according to claim 69, wherein the condition includes an eating disorder of the subject, and wherein the indication includes an amount of food in a stomach of the subject, and wherein the sensor comprises one or more electrodes configured to be secured to an outer wall of the stomach, and to sense the amount of the food in the stomach.

79. (Previously Presented) Apparatus according to claim 69, wherein the sensor is configured to sense the indication by sensing electroencephalographic (EEG) activity of the subject.

80. (Previously Presented) Apparatus according to claim 69, wherein the sensor is configured to sense the indication by sensing blood pressure of the subject.

81. (Previously Presented) Apparatus according to claim 37, wherein the longitudinal tissue includes a vagus nerve of the subject, and wherein the electrode device is configured to be coupled to the vagus nerve of the subject.

82. (Withdrawn) Apparatus according to claim 35, wherein the control unit is adapted to configure the current so as to be capable of treating migraine headache of the subject.

83. (Withdrawn) Apparatus according to claim 35, wherein the control unit is adapted to configure the current so as to be capable of treating depression of the subject.

84. (Previously Presented) Apparatus according to claim 35, wherein the control unit is adapted to configure the current so as to be capable of treating tremor of the subject.

85. (Previously Presented) Apparatus according to claim 35, wherein the control unit is adapted to configure the current so as to be capable of treating Parkinson's disease of the subject.

86. (Withdrawn) Apparatus according to claim 35, wherein the control unit is adapted to configure the current so as to be capable of treating stroke of the subject.

87. (Previously Presented) Apparatus for treating a condition of a subject, comprising:

an electrode device, configured to be coupled to longitudinal nervous tissue of the subject;

a sensor, configured to sense an indication of a presence of the condition and to generate a sensor signal responsive thereto; and

a control unit, configured to receive the sensor signal, and, responsive thereto, to drive the electrode device to:

apply to the nervous tissue a current which is capable of inducing first orthodromic action potentials that propagate in the nervous tissue in a first direction, so as to treat the condition, and

suppress second action potentials from propagating in the nervous tissue in a second direction opposite the first direction.

88. (Previously Presented) Apparatus according to claim 87, wherein the control unit is configured to drive the electrode device to configure the current to induce the first orthodromic action potentials to propagate in the nervous tissue in an afferent direction with respect to a central nervous system of the subject, so as to treat the condition.

89. (Previously Presented) Apparatus according to claim 88, wherein the longitudinal tissue includes a vagus nerve of the subject, and wherein the electrode device is configured to be coupled to the vagus nerve.

90. (Previously Presented) Apparatus according to claim 87, wherein the control unit is configured to drive the electrode device to configure the current to induce the first orthodromic action potentials to propagate in the nervous tissue in an efferent direction with respect to a central nervous system of the subject, so as to treat the condition.

91. (Previously Presented) Apparatus according to claim 90, wherein the longitudinal tissue includes a vagus nerve of the subject, and wherein the electrode device is configured to be coupled to the vagus nerve.

92. (Previously Presented) Apparatus according to claim 87, wherein the control unit is configured to: (a) drive the

electrode device to apply the current, and (b) suppress the second action potentials, at substantially the same time.

93. (Previously Presented) Apparatus according to claim 87, wherein the control unit is configured to regulate the suppressing of the second action potentials so as to inhibit an undesired response of a central nervous system of the subject generated responsive to the electrode device applying the current to the nervous tissue.

94. (Previously Presented) Apparatus according to claim 87, wherein the control unit is configured to regulate the suppressing of the second action potentials so as to inhibit an undesired sensation generated responsive to the electrode device applying the current to the nervous tissue.

95. (Previously Presented) Apparatus according to claim 87, wherein the control unit is configured to regulate the suppressing of the second action potentials so as to suppress second action potentials induced responsive to the electrode device applying the current.

96. (Withdrawn – Currently Amended) Apparatus according to claim 87, wherein the condition is selected from the group consisting of: ~~an involuntary movement disorder of the subject,~~ a gastrointestinal motility disorder of the subject, an eating disorder of the subject, obesity of the subject, anorexia of the subject, a gastrointestinal tract disorder of the subject, hypertension of the subject, and coma of the subject, ~~and epilepsy of the subject,~~ and wherein the control unit is configured to configure the current so as to be capable of treating the selected condition.

97. (Previously Presented) Apparatus according to claim 87, wherein the condition is selected from the group consisting of: Parkinson's disease, and tremor, and wherein the control unit is

configured to configure the current so as to be capable of treating the selected condition.

98. (Previously Presented) Apparatus according to claim 87, wherein the longitudinal tissue includes a vagus nerve of the subject, wherein the electrode device is configured to be coupled to the vagus nerve, and wherein the control unit is configured to: (a) configure the current so as to be capable of treating epilepsy of the subject, and (b) suppress second action potentials that interfere with an ability of the subject to speak.

99. (Withdrawn) Apparatus according to claim 87, wherein the longitudinal tissue includes a vagus nerve of the subject, wherein the electrode device is configured to be coupled to the vagus nerve, and wherein the control unit is configured to configure the current so as to be capable of inducing constriction of a lower esophageal sphincter of the subject.

100. (Previously Presented) Apparatus according to claim 87, wherein the longitudinal tissue is selected from the group consisting of: longitudinal nervous tissue of a central nervous system of the subject, and longitudinal nervous tissue of a peripheral nervous system of the subject, and wherein the electrode device is configured to be coupled to the selected tissue.

101. (Previously Presented) Apparatus according to claim 87, wherein the control unit is configured to regulate the suppressing of the second action potentials from propagating in the second direction so as to inhibit an undesired effector action responsive to driving the electrode device to apply the current to the nervous tissue.

102. (Previously Presented) Apparatus according to claim 87, wherein the sensor is configured to sense the indication by

sensing at least one physiological parameter of the subject selected from the group consisting of: electroencephalographic (EEG) waves, respiration changes, heart rate changes, an aura, and a motor effect.

103. (Withdrawn) Apparatus according to claim 87, wherein the condition includes a gastrointestinal motility disorder of the subject, and wherein the sensor is configured to sense the indication by sensing at least one physiological parameter of the subject selected from the group consisting of: a pattern of contractions of a portion of a gastrointestinal tract of the subject, and digestion by the subject.

104. (Withdrawn) Apparatus according to claim 87, wherein the condition includes a sleep disorder of the subject, and wherein the sensor is configured to sense the indication by sensing at least one physiological parameter of the subject selected from the group consisting of: a respiration pattern of the subject indicative of wakefulness during normal nocturnal hours, abdominal impedance changes associated with respiration by the subject indicative of the sleep disorder, a sustained abnormal period of cessation of respiration of the subject, respiration typically associated with a state of sleeplessness of the subject, electroencephalographic (EEG) activity of the subject, a sudden uncontrolled nodding of the head of the subject, abdominal impedance of the subject, and eye movement of the subject.

105. (Withdrawn) Apparatus according to claim 87, wherein the indication includes swallowing by the subject, and wherein the sensor comprises one or more electrodes configured to be implanted in a vicinity of an esophagus of the subject, and to detect the swallowing.

106. (Withdrawn) Apparatus according to claim 87, wherein the condition includes an eating disorder of the subject, and wherein the indication includes a quantity of food consumed by the

subject in a predetermined period of time, and wherein the sensor is configured to sense the quantity.

107. (Withdrawn) Apparatus according to claim 87, wherein the condition includes an eating disorder of the subject, and wherein the indication includes an amount of food in a stomach of the subject, and wherein the sensor comprises one or more electrodes configured to be secured to an outer wall of the stomach, and to sense the amount of the food in the stomach.

108. (Previously Presented) Apparatus according to claim 87, wherein the sensor is configured to sense the indication by sensing blood pressure of the subject.

109. (Previously Presented) Apparatus according to claim 87, wherein the control unit is configured to drive the electrode device to apply an electric field to the nervous tissue configured to suppress the second action potentials.

110. (Previously Presented) Apparatus according to claim 109, wherein the electrode device comprises a plurality of electrode devices, configured to be coupled to the nervous tissue at respective longitudinal sites thereof.

111. (Currently Amended) A method for treating a condition of a subject, comprising:

identifying that the subject suffers from the condition; and

treating the condition by:

driving a current into longitudinal nervous tissue of the subject having a first set of fibers and a second set of fibers, the first set of fibers having diameters generally different from diameters of the second set of fibers;

configuring the current to induce, in the first set of fibers, first orthodromic action potentials that propagate in the nervous tissue in a first direction, so as to treat the

condition, while substantially not inducing, in the second set of fibers, action potentials that propagate in the first direction; and

suppressing second action potentials from propagating in the nervous tissue in a second direction opposite to the first direction.

112. (Previously Presented) A method according to claim 111, wherein configuring the current comprises configuring the current to induce the first orthodromic action potentials to propagate in the first set of fibers in an afferent direction with respect to a central nervous system of the subject.

113. (Previously Presented) A method according to claim 111, wherein configuring the current comprises configuring the current to induce the first orthodromic action potentials to propagate in the first set of fibers in an efferent direction with respect to a central nervous system of the subject.

114. (Previously Presented) A method according to claim 111, wherein the longitudinal nervous tissue includes a vagus nerve of the subject, and wherein driving the current comprises driving the current into the vagus nerve.

115. (Withdrawn – Currently Amended) A method according to claim 111, wherein the condition is selected from the group consisting of: ~~an involuntary movement disorder of the subject,~~ a gastrointestinal motility disorder of the subject, an eating disorder of the subject, obesity of the subject, anorexia of the subject, a gastrointestinal tract disorder of the subject, hypertension of the subject, and coma of the subject, ~~and epilepsy of the subject,~~ and wherein identifying comprises identifying that the subject suffers from ~~driving the current comprises configuring the current to be capable of treating~~ the selected condition ~~of the subject~~.

116. (Previously Presented) A method according to claim 111, wherein suppressing the second action potentials comprises suppressing the second action potentials repeatedly, during a series of temporally non-contiguous action potential suppression periods, and wherein the method comprises substantially withholding the suppressing of the second action potentials between the action potential suppression periods.

117. (Previously Presented) A method according to claim 111, and comprising sensing an indication of a presence of the condition, wherein driving the current comprises driving the current responsive to sensing the indication.

118. (Previously Presented) A method according to claim 111, wherein suppressing the second action potentials comprises identifying an action potential conduction velocity and suppressing second action potentials characterized by the identified conduction velocity.

119. (Previously Presented) A method according to claim 118, wherein the method comprises withholding suppression of an action potential traveling in the second direction having a conduction velocity substantially different from the identified conduction velocity.

120. (Withdrawn – Currently Amended) A method according to claim 111, wherein the condition is selected from the group consisting of: migraine headache, depression, ~~tremor, Parkinson's disease,~~ and stroke, and wherein identifying comprises identifying that the subject suffers from ~~the control unit is adapted to configure the current so as to be capable of treating~~ the selected condition ~~of the subject~~.

121. (Currently Amended) A method for treating a condition of a subject, comprising:

sensing an indication of a presence of the condition;

responsive to sensing the indication, treating the condition by:

driving into a vagus nerve of the subject a current which is capable of inducing first orthodromic action potentials that propagate in the vagus nerve in a first direction, so as to treat the condition; and

suppressing second action potentials from propagating in the vagus nerve in a second direction opposite to the first direction.

122. (Previously Presented) A method according to claim 121, wherein driving the current comprises configuring the current to induce the first orthodromic action potentials to propagate in the vagus nerve in an afferent direction with respect to a central nervous system of the subject.

123. (Previously Presented) A method according to claim 121, wherein driving the current comprises configuring the current to induce the first orthodromic action potentials to propagate in the vagus nerve in an efferent direction with respect to a central nervous system of the subject.

124. (Withdrawn – Currently Amended) A method according to claim 121, wherein the condition is selected from the group consisting of: ~~an involuntary movement disorder of the subject,~~ a gastrointestinal motility disorder of the subject, an eating disorder of the subject, obesity of the subject, anorexia of the subject, a gastrointestinal tract disorder of the subject, hypertension of the subject, coma of the subject, and migraine headache of the subject ~~and epilepsy of the subject,~~ and wherein sensing comprises sensing the indication of the presence of ~~driving the current comprises configuring the current to be capable of treating~~ the selected condition ~~of the subject~~.

125. (Previously Presented) A method according to claim 121, wherein suppressing the second action potentials comprises suppressing the second action potentials repeatedly, during a series of temporally non-contiguous action potential suppression periods, and wherein the method comprises substantially withholding the suppressing of the second action potentials between the action potential suppression periods.

126. (Currently Amended) A method according to claim 121, wherein the condition is selected from the group consisting of: Parkinson's disease, ~~migraine headache,~~ and tremor, and wherein sensing comprises sensing the indication of the presence of ~~driving the current comprises configuring the current to be capable of treating~~ the selected condition ~~of the subject~~.

127. (Previously Presented) A method according to claim 121, wherein sensing the indication comprises sensing at least one physiological parameter of the subject selected from the group consisting of: electroencephalographic (EEG) waves, respiration changes, heart rate changes, an aura, and a motor effect.

128. (Withdrawn) A method according to claim 121, wherein the condition includes a gastrointestinal motility disorder of the subject, and sensing the indication comprises sensing at least one physiological parameter of the subject selected from the group consisting of: a pattern of contractions of a portion of a gastrointestinal tract of the subject, and digestion by the subject.

129. (Withdrawn) A method according to claim 121, wherein the condition includes a sleep disorder of the subject, and wherein sensing the indication comprises sensing at least one physiological parameter of the subject selected from the group consisting of: a respiration pattern of the subject indicative of wakefulness during normal nocturnal hours, abdominal impedance changes associated with respiration by the subject indicative of

the sleep disorder, a sustained abnormal period of cessation of respiration of the subject, respiration typically associated with a state of sleeplessness of the subject, electroencephalographic (EEG) activity of the subject, a sudden uncontrolled nodding of the head of the subject, abdominal impedance of the subject, and eye movement of the subject.

130. (Withdrawn) A method according to claim 121, wherein sensing the indication comprises sensing swallowing by the subject.

131. (Withdrawn) A method according to claim 121, wherein the condition includes an eating disorder of the subject, and wherein sensing the indication comprises sensing a quantity of food consumed by the subject in a predetermined period of time.

132. (Withdrawn) A method according to claim 121, wherein the condition includes an eating disorder of the subject, and wherein sensing the indication comprises sensing an amount of food in a stomach of the subject.

133. (Previously Presented) A method according to claim 121, wherein sensing the indication comprises sensing electroencephalographic (EEG) activity of the subject.

134. (Previously Presented) A method according to claim 121, wherein sensing the indication comprises sensing blood pressure of the subject.

135. (New) Apparatus according to claim 87, wherein the condition includes an involuntary movement disorder, and wherein the control unit is configured to configure the current so as to be capable of treating the involuntary movement disorder.

136. (New) Apparatus according to claim 87, wherein the condition includes epilepsy, and wherein the control unit is configured to configure the current so as to be capable of treating the epilepsy.

137. (New) A method according to claim 111, wherein the condition includes an involuntary movement disorder of the subject, and wherein identifying comprises identifying that the subject suffers from the involuntary movement disorder.

138. (New) A method according to claim 111, wherein the condition includes epilepsy, and wherein identifying comprises identifying that the subject suffers from the epilepsy.

139. (New) A method according to claim 111, wherein the condition is selected from the group consisting of: tremor and Parkinson's disease, and wherein identifying comprises identifying that the subject suffers from the selected condition.

140. (New) A method according to claim 121, wherein the condition is selected from the group consisting of: an involuntary movement disorder, and epilepsy, and wherein sensing comprises sensing the indication of the presence of the selected condition.